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Introducing myself

- Netherlands, Son (Eindhoven)
 - Married, two daughters (4 and 7 years old)
- Physics (EUT)
- Post-masters programme Software Technology (EUT)
- Philips CE (1 year)
- BSO → Atos Origin - Technical Automation (10 years)
 - Consultant / Architect

Architecture from a business perspective

IEEE 1471 definition

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Architecture =
the fundamental organization of a system embodied in its **components**, their **relationships** to **each other** and to the **environment** and the **principles** guiding its design and evolution.

where:

- *fundamental organization* means essential, unifying concepts and principles
- *system* includes application, system, platform, system-of-systems, enterprise, product line, ...
- *environment* is developmental, operational, programmatic, ... context of the system

(IEEE 1471)

Architecture from a business perspective

Topics


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1. Software intensive systems
2. Software in the value chain
3. Software as a business enabler
4. A reference model for architecture

Presentation based on IGSA project, performed by
Atos Origin TA and Philips Research SwA

Architecture from a business perspective

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Topics

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Architecture from a business perspective

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Software intensive systems



Architecture from a business perspective

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Software intensive systems

- Software development cost is big part of R&D cost
- Software size tends to be big (MLOC range)
 - Professional products
 - High-end digital consumer products
- Performance and reliability are major issues
- Tight coupling with other disciplines

Architecture from a business perspective

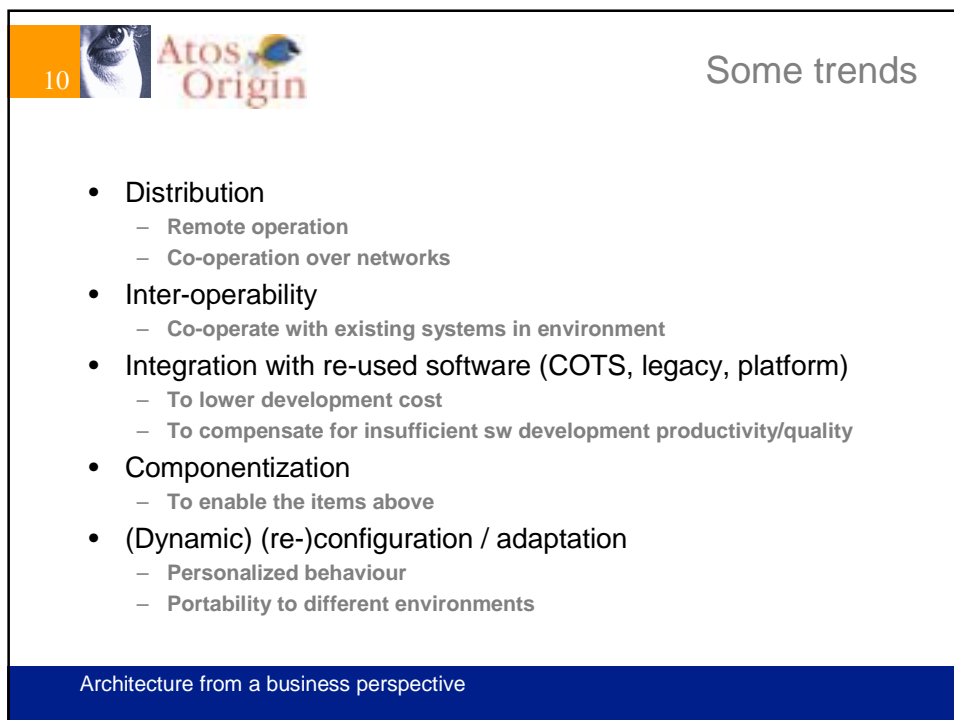
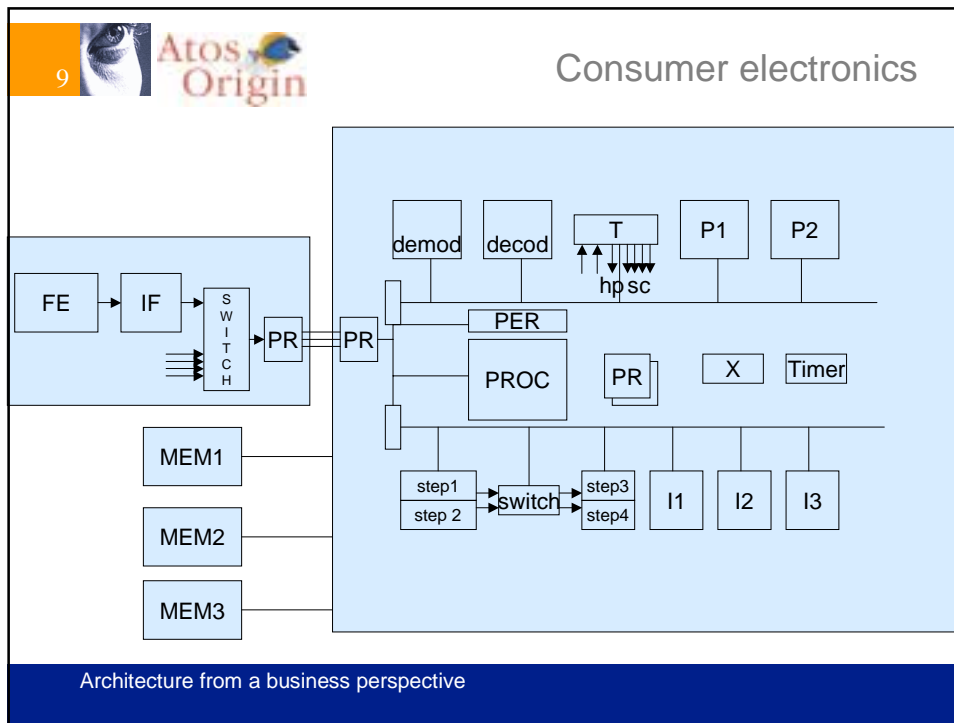
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Copier



Architecture from a business perspective



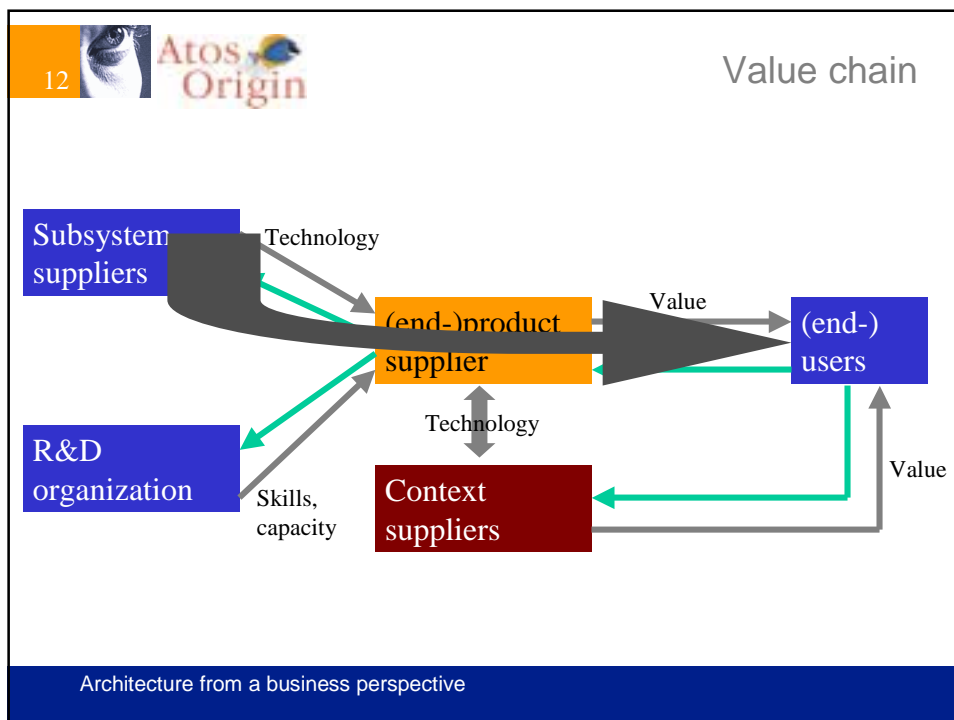
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Topics

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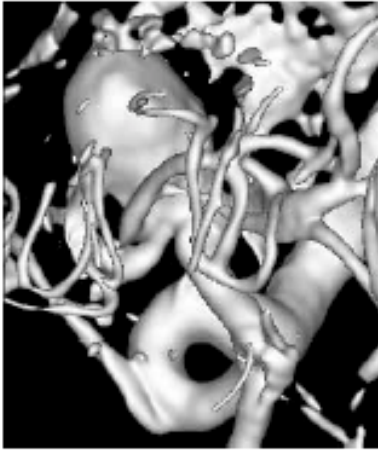

Architecture from a business perspective



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3D reconstruction (X-ray)



Architecture from a business perspective

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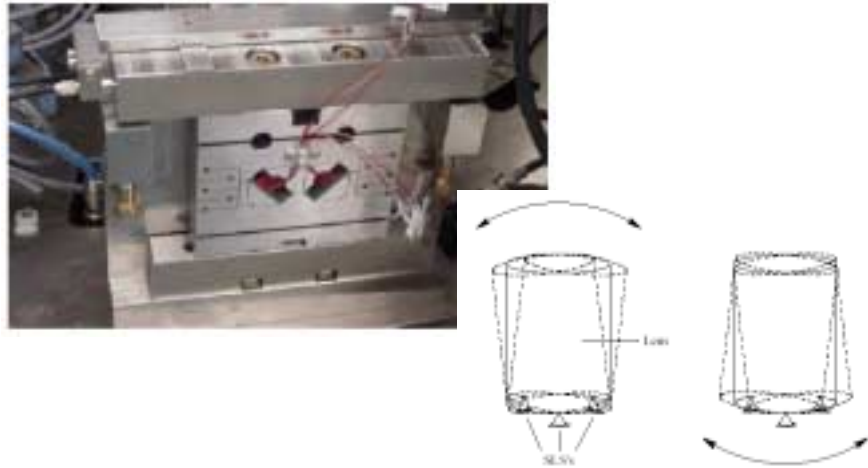


High-end TV

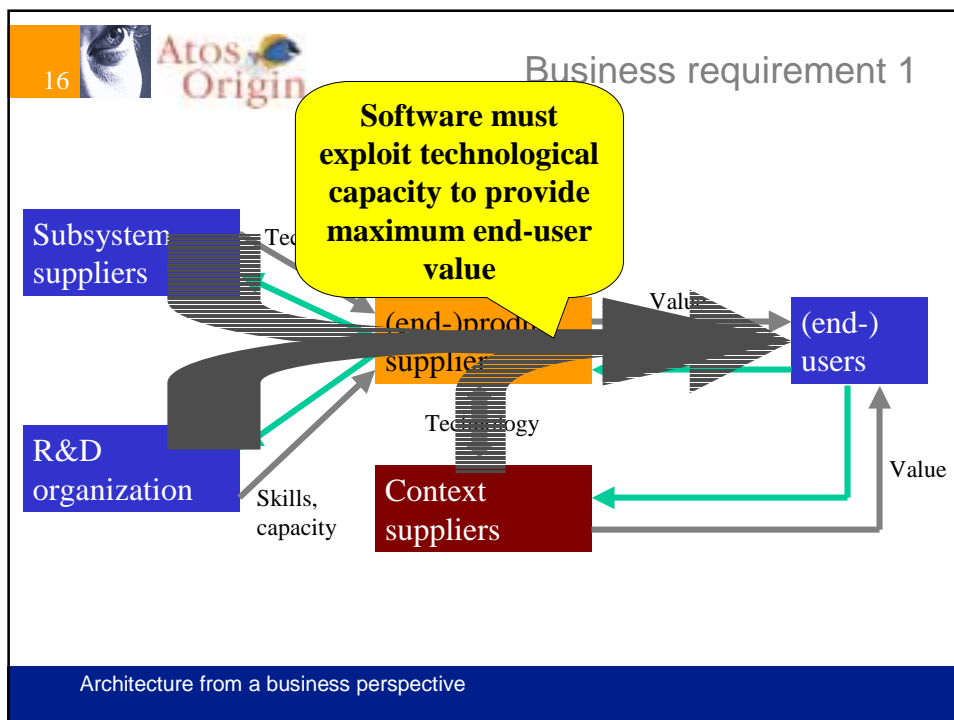


Architecture from a business perspective


15 Atos Origin Smart lens support (waferstepper)



Architecture from a business perspective



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Dunn's law

Dunn's law:


“In embedded systems a software team doubles every four years to keep up with Moore's Law”

Doug Dunn
President and Chief Executive Officer ASML

→ Software development costs are becoming dominant in the total R&D costs

Architecture from a business perspective


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Law of diminishing returns

The *Law of Diminishing Returns*, or:
“Why is it impossible to grow all of the world's wheat in a single flower pot?”

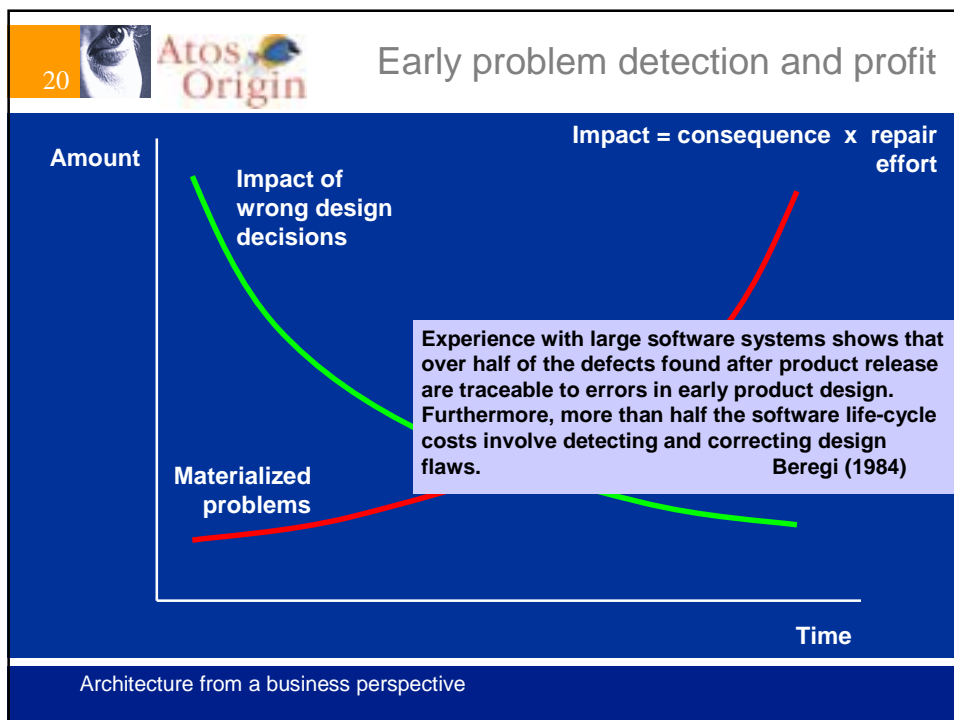
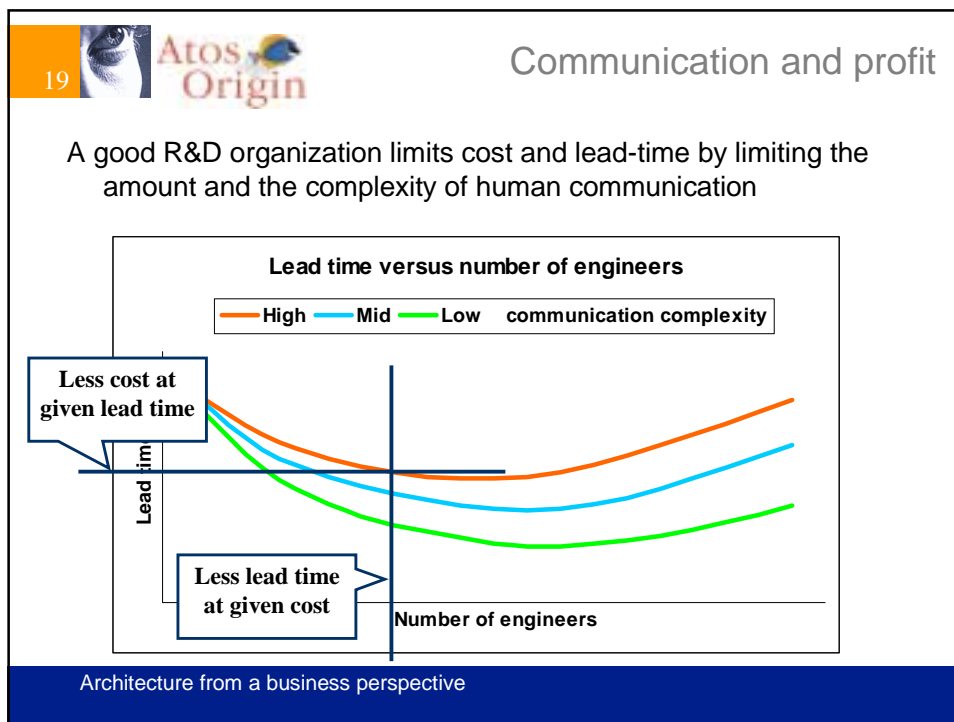
- The answer is the Law of Diminishing Returns. If we fix the quantity of land, adding more and more labor brings proportionately less and less wheat
- The Law of Diminishing Returns is based on the assumption that there is an important factor of production whose quantity is fixed

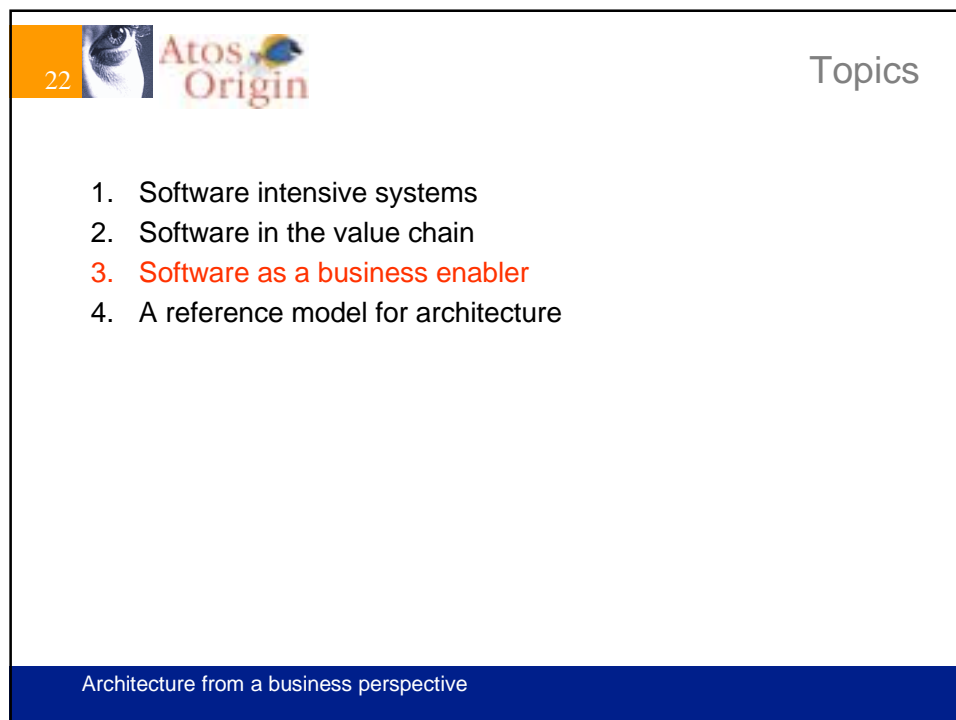
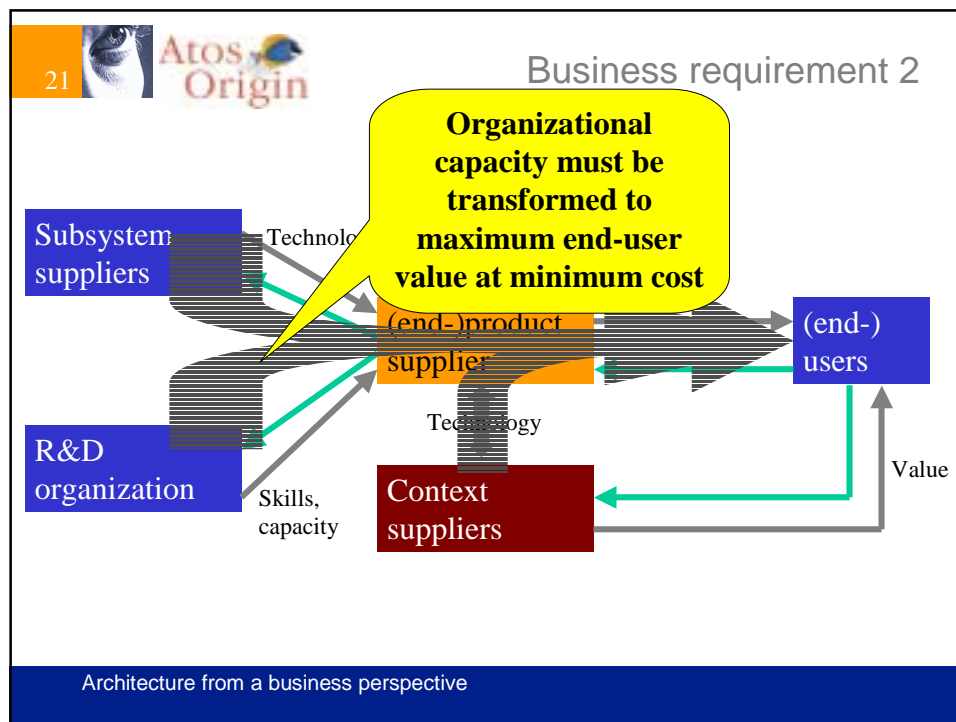


The software production process exhibits diminishing returns because of the **costs of communication that rise exponentially with team size**, and the **limitation of a person's time for communication**

(See, a.o., Brooks, *The mythical man-month*, 1995 edition)

Architecture from a business perspective





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Software development mission

Software development mission:

Transform technological and organizational capacity to maximum end-user value as efficiently as possible

The diagram illustrates the Software Development Mission. It features a central yellow circle labeled 'Software development'. This circle is surrounded by a blue oval divided into three segments: 'End-users' at the top, 'Technology' on the left, and 'Organization' on the right. Three grey arrows point from each of these segments towards the central yellow circle, representing the flow of value or transformation.

Architecture from a business perspective

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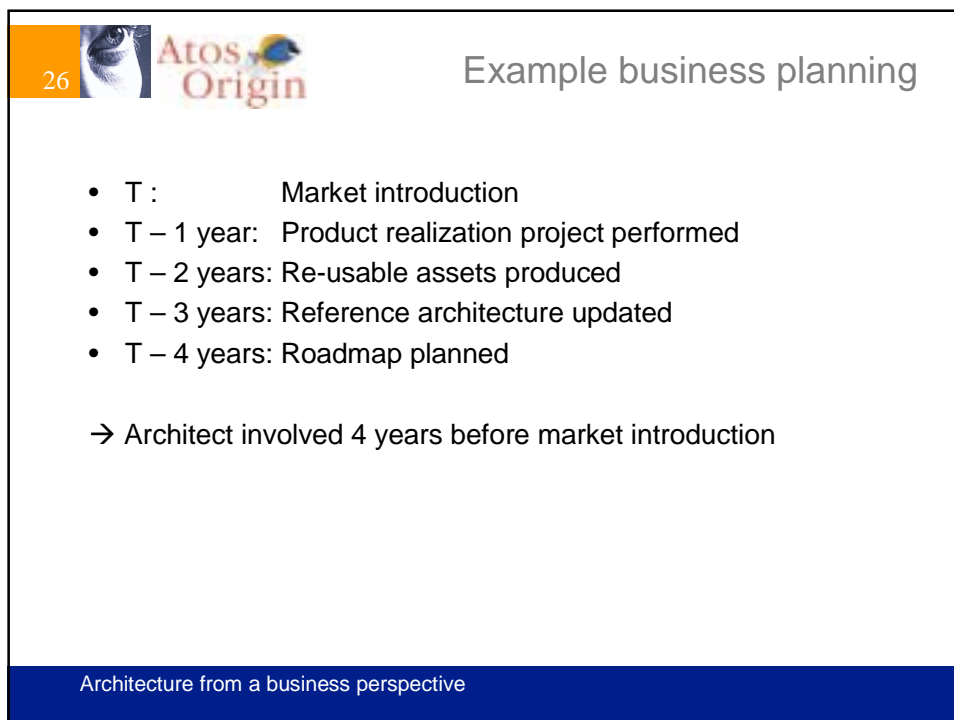
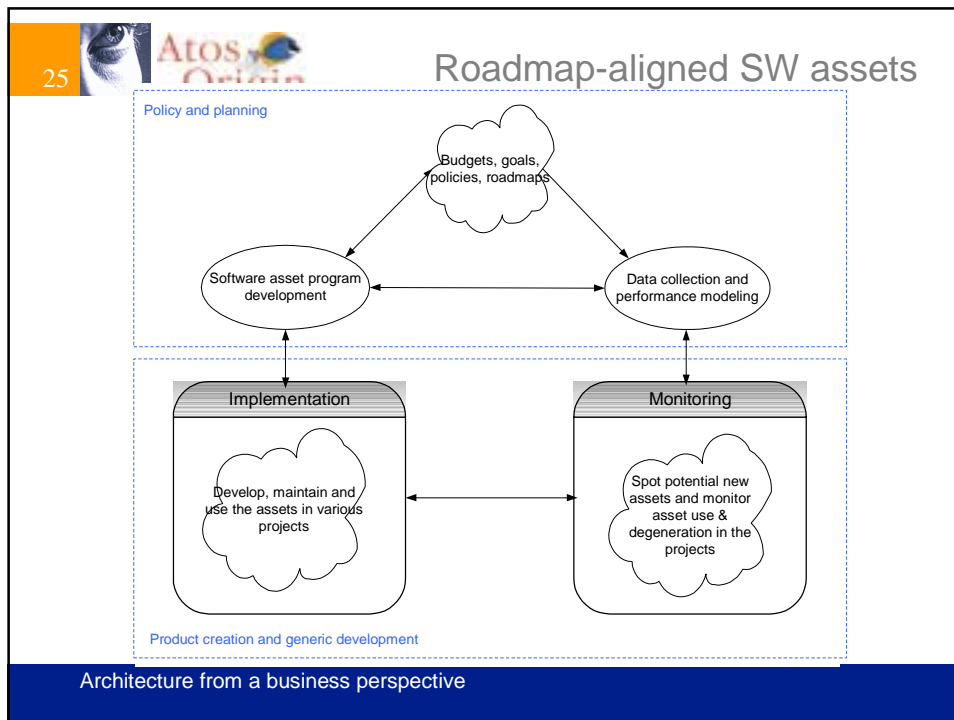
Atos Origin

Business continuity


Product/market Roadmaps

The diagram illustrates Business Continuity. It features a central yellow circle labeled 'Software development'. This circle is surrounded by a blue oval divided into three segments: 'End-users' at the top, 'Technology' on the left, and 'Organization' on the right. Three grey arrows point from each of these segments towards the central yellow circle. Below the oval, there are three labels: 'Technology Roadmaps' under the Technology segment, 'Organizational Roadmaps' under the Organization segment, and 'Product/market Roadmaps' centered above the End-users segment.

Architecture from a business perspective



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Software as a business enabler

- Transform **technological** and **organizational** capacity to maximum **end-user value** as efficiently as possible
- Ensure business continuity by developing and monitoring **roadmap-aligned software assets**

→ Software architecture must support these processes

Architecture from a business perspective

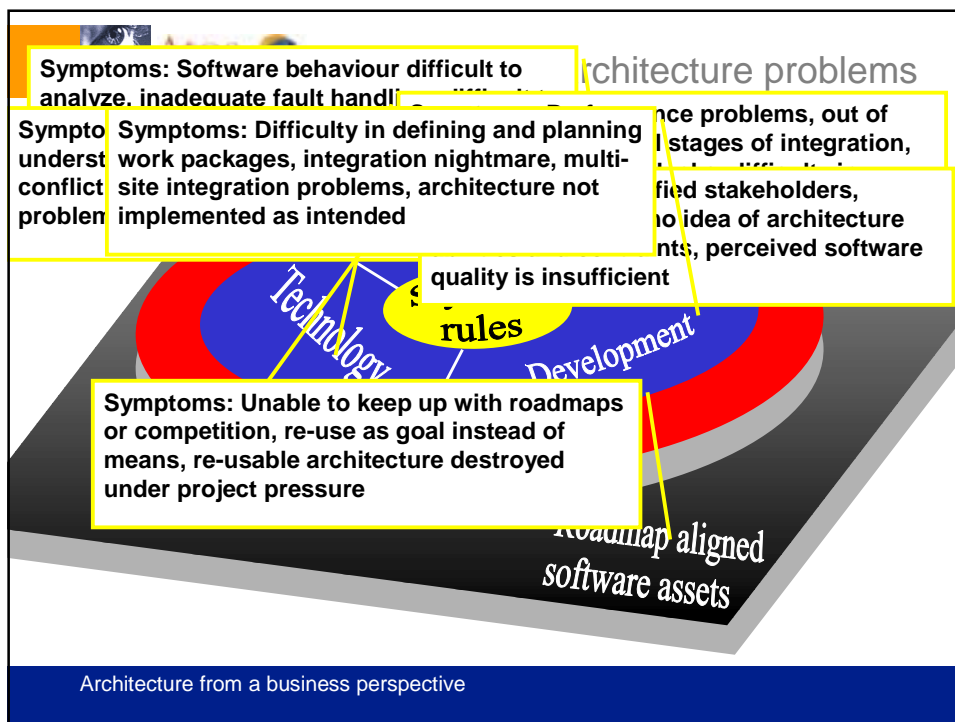
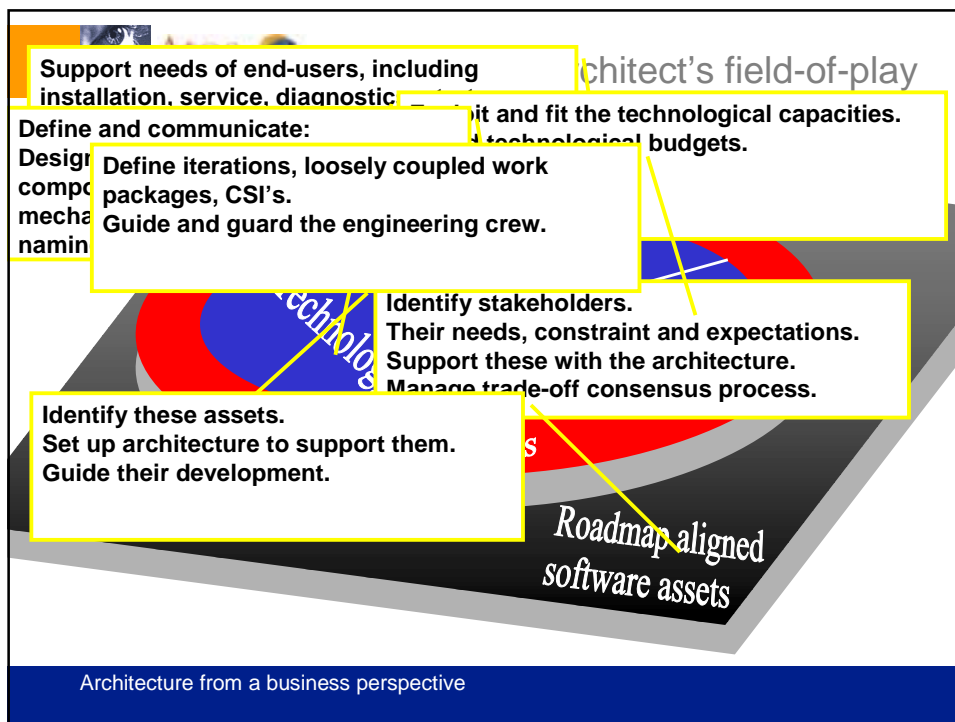
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Architecture from a business perspective



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A reference model

Can we develop a reference model to measure the “goodness” of an architecture?

- Based on areas in architecture field-of-play

Yes, this seems feasible


- Collected good practices for each area in field-of-play
 - From literature, cases, expert opinions
- First version ready: 60+ good practices in total
- Can be used as reference (like KPA good practices)

Architecture from a business perspective

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Questions/Discussion



Frank.vandenBerk@AtosOrigin.com

Architecture from a business perspective